



US006145023A

United States Patent [19][11] **Patent Number:** **6,145,023****Iwasaki**[45] **Date of Patent:** ***Nov. 7, 2000**

[54] **INFORMATION STORAGE AND INFORMATION PROCESSING SYSTEM UTILIZING STATE-DESIGNATING MEMBER PROVIDED ON SUPPORTING CARD SURFACE WHICH PRODUCES WRITE-PERMITTING OR WRITE-INHIBITING SIGNAL**

[75] Inventor: **Hiroshi Iwasaki**, Yokohama, Japan

[73] Assignee: **Kabushiki Kaisha Toshiba**, Kawasaki, Japan

[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] Appl. No.: **08/592,508**

[22] Filed: **Jan. 26, 1996**

[30] **Foreign Application Priority Data**

Feb. 3, 1995 [JP] Japan 7-017185

[51] **Int. Cl.**⁷ **G06F 13/12; G11B 23/03**

[52] **U.S. Cl.** **710/13; 710/8; 340/870.16; 361/684; 361/737; 455/41; 360/133**

[58] **Field of Search** **340/870.16; 361/684; 361/737; 235/492; 455/41; 360/133; 710/13.**
8

[56] **References Cited**

U.S. PATENT DOCUMENTS

| | | | |
|-----------|---------|-----------------------|---------|
| 4,264,917 | 4/1981 | Ugon | 357/74 |
| 4,703,420 | 10/1987 | Irwin | 364/200 |
| 4,837,628 | 6/1989 | Sasaki | 358/209 |
| 4,860,127 | 8/1989 | Takahashi et al. | 360/60 |
| 4,860,142 | 8/1989 | DiGiesi | 360/133 |
| 4,882,702 | 11/1989 | Struger et al. | 364/900 |
| 4,916,662 | 4/1990 | Mizula | 365/52 |
| 4,943,464 | 7/1990 | Gloton et al. | 428/76 |
| 4,980,856 | 12/1990 | Ueno | 364/900 |
| 5,018,017 | 5/1991 | Sasaki et al. | 358/209 |
| 5,036,429 | 7/1991 | Kaneda et al. | 361/392 |

| | | | |
|-----------|---------|-----------------------|------------|
| 5,153,818 | 10/1992 | Mukougawa et al. | 361/395 |
| 5,172,338 | 12/1992 | Mehrotra et al. | 365/185 |
| 5,184,282 | 2/1993 | Kaneda et al. | 361/395 |
| 5,210,671 | 5/1993 | Blackston | 360/133 |
| 5,226,006 | 7/1993 | Wang et al. | 365/189.01 |
| 5,272,374 | 12/1993 | Kodai et al. | 257/679 |
| 5,293,236 | 3/1994 | Adachi et al. | 348/231 |
| 5,297,029 | 3/1994 | Nakai et al. | 365/238.5 |
| 5,297,148 | 3/1994 | Harari et al. | 371/10.2 |
| 5,299,089 | 3/1994 | Lwee | 361/684 |
| 5,343,319 | 8/1994 | Moore | 359/152 |

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

| | | |
|--------------|--------|----------------------|
| 0 214 478 | 3/1987 | European Pat. Off. . |
| 0 588 517 A1 | 3/1994 | European Pat. Off. . |
| 0 708 429 A1 | 4/1996 | European Pat. Off. . |
| 43 22 666 A1 | 1/1994 | Germany . |
| 64-55691 | 3/1990 | Japan . |
| 4-16396 | 1/1992 | Japan . |
| 818554 | 8/1959 | United Kingdom . |
| 2 208 029 | 2/1989 | United Kingdom . |

OTHER PUBLICATIONS

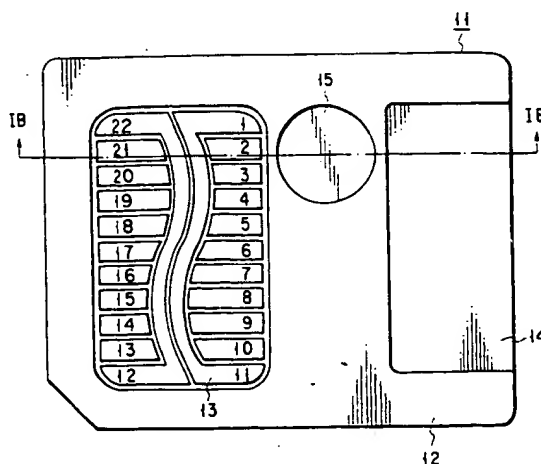
European Patent Office Publication, Patent Abstracts of Japan, Publication No. 63137387, dated Jun. 9, 1988.

Primary Examiner—Meng-Ai T. An
Assistant Examiner—Rehana Perveen
Attorney, Agent, or Firm—Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.

[57] ABSTRACT

In a small and thin memory module for sharing data among electronic devices such as information processing apparatuses, a write prohibit state can be visually recognized. A conductive seal is attached to a predetermined position on a support member, thereby setting the memory module in the write prohibit state. The conductive seal visually indicates the write prohibit state. When the memory module is mounted in a connector section of a card-shaped holder, connector pins are electrically connected to each other via the conductive seal. Thus, a write prohibit mechanism is realized at low cost.

36 Claims, 4 Drawing Sheets



U.S. PATENT DOCUMENTS

| | | | | | | | |
|-----------|---------|-----------------|------------|-----------|---------|----------------|------------|
| 5.375.037 | 12/1994 | Le Roux | 361/684 | 5.568.424 | 10/1996 | Cerneia et al. | 365/185.33 |
| 5.388.084 | 2/1995 | Itoh et al. | 365/226 | 5.572.466 | 11/1996 | Sukegawa | 365/185.33 |
| 5.430.859 | 7/1995 | Norman et al. | 395/425 | 5.572.478 | 11/1996 | Sato et al. | 365/226 |
| 5.438.359 | 8/1995 | Aoki | 348/207 | 5.584.043 | 12/1996 | Burkart | 395/882 |
| 5.457.590 | 10/1995 | Barrett et al. | 360/133 | 5.592.420 | 1/1997 | Cerneia et al. | 365/185.18 |
| 5.469.399 | 11/1995 | Sato et al. | 365/226 | 5.596.532 | 1/1997 | Cerneia et al. | 365/185.18 |
| 5.475.441 | 12/1995 | Parulski et al. | 348/552 | 5.602.987 | 2/1997 | Harari et al. | 395/182.06 |
| 5.488.433 | 1/1996 | Washino et al. | 348/722 | 5.608.673 | 3/1997 | Rhee | 365/185.33 |
| 5.508.971 | 4/1996 | Cerneia et al. | 365/185.23 | 5.611.057 | 3/1997 | Pecone et al. | 395/282 |
| 5.509.018 | 4/1996 | Nijima et al. | 371/10.2 | 5.615.344 | 3/1997 | Corder | 395/309 |
| 5.535.328 | 7/1996 | Harari et al. | 395/182.05 | 5.621.685 | 4/1997 | Cerneia et al. | 365/185.18 |
| 5.539.600 | 7/1996 | Lee et al. | 360/133 | 5.638.321 | 6/1997 | Lee et al. | 365/185.17 |
| 5.550.709 | 8/1996 | Iwasaki | 361/684 | 5.663.901 | 9/1997 | Wallace et al. | 365/52 |
| 5.559.993 | 9/1996 | Elliott et al. | 395/490 | 5.671.229 | 9/1997 | Harari et al. | 371/10.2 |
| 5.563.825 | 10/1996 | Cerneia et al. | 365/185.18 | 5.693.570 | 12/1997 | Cerneia et al. | 437/205 |
| 5.566.105 | 10/1996 | Tanaka et al. | 365/185.22 | 5.887.145 | 3/1999 | Harari et al. | 395/282 |